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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Donald J. Fasen

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02/07/2006

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EXAMINER

CHOW, LIXI

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/043,970	Applicant(s) FASEN ET AL.	
	Examiner Lixi Chow	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7,9-11,13,26 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,9-11,13,26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-3, 5-7, 9-11, 13, 26 and 27 are pending in this application.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/28/05 has been entered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-7, 9-11, 13, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Kasanuki et al (US 5,418,771; hereafter Kasanuki).

Regarding claim 1:

Kasanuki discloses a movable system having capacitance-based position sensing (see Fig. 2 and col. 3, lines 26-37), comprising:

a pair of objects (see Fig. 2, elements 104 and 101);

an actuator configured to effect an operative range of relative motion between the objects along an axis (Fig. 12, element 1108); and

a capacitance-based position sensor including a first plate secured to one of the objects (see Fig. 3, element 110; Fig. 3 shows the simple configuration of a sensor, however, the

configuration of capacitance plates in actual application is shown in Fig. 9 (see Col. 11, lines 53-59); therefore, element 801 in Fig. 9 also corresponds to first plate assembly); and

a pair of second plates secured to the other of the objects so that the second plates are adjacent and coplanar, and so that the second plates are spaced from, and parallel to, the first plate as the objects move relative to one another along the axis, and such that the second plates in use come into simultaneously overlap with the first plate (see Fig. 3, element 120; or Fig. 9, element 802 and 803 correspond to a pair of second plates),

where the configuration of the first plate and the second plates results simultaneously in two spaced-plate capacitors having capacitances that vary oppositely as the objects move relative to one another within the operative range along the axis (see Figs. 10A and 10B and Col. 11, line 62 to Col. 12, line 6; at certain points of the graphs, the capacitance between C4 and C5 are opposite to each other), where the capacitance-based position sensor uses the capacitances to generate output usable to determine relative position of the objects along the axis (see col. 3, lines 31-35);

where the capacitance-based position sensor is configured so that the output is substantially independent of perpendicular spacing variations occurring between the first plate and the second plates (see Col. 9, lines 17-45).

Regarding claim 2:

Kasanuki further discloses a capacitance measuring circuit configured to apply a time-varying input signal to one of the pair of second plates, and apply an inversion to the time-varying input signal to the other of the pair of second plates (see Col. 5, line 52 to Col. 6, lines 4; Kasanuki shows that time-varying input signals (oscillation signal) are transmitted to each set of

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electrodes or plates to generate magnitude of capacitive coupling of the upper and lower electrodes; it is inherent that an inversion of the time-varying input signal is apply to the third plate assembly, so that magnitude of the capacitive coupling between the upper and lower electrodes can be use to detect the relative position between object 101 and object 104).

Regarding claim 3:

Kasanuki further discloses the time-varying input signal includes a sinusoidal carrier (see Col. 5, line 52 to Col. 6, lines 4; oscillation signal corresponds to sinusoidal; it is inherent that the inversion of the time-varying signal is produced through a phase shift of the sinusoidal time-varying input signal).

Regarding claim 5:

Claim 5 recites similar limitations as claim 1. Hence, claim 5 is rejected under the same reason set forth in claim 1. In addition to claim 1, Kasanuki also discloses an output-input transfer function that is substantially independent of perpendicular spacing variations occurring between the first plate and each of the second plates as a result of the pair of objects moving relative to one another (see Col. 9, lines 17-45; it is apparent that the capacitance measuring circuit of Kasanuki have an output-input transfer function that is substantially independent of the spacing between the first plate and the second plates, because Kasanuki points out that the capacitance signal (output) can be obtained without being affected by the gap change in the z direction).

Regarding claim 6:

Kasanuki further discloses one of the pair of objects is a computer-readable storage medium movably mounted within an enclosure (see Fig. 2, element 102 is recording medium

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being mounted on the object 101), the capacitance-based position sensor being configured to generate the output so that the output is usable to determine relative position of the storage medium to the enclosure (see col. 3, lines 31-35).

Regarding claim 7:

Kasanuki further discloses read/write device fixed to the enclosure, the read/write device being configured to read data from and write data to the storage medium (see col. 3, lines 38-45).

Regarding claim 9:

In addition to claim 1, Kasanuki also discloses the configuration of the first plate and second plates results simultaneously in two space-plate capacitors having capacitances that continually vary as the objective move relative to one another along the axis (see Figs. 10A and 10B, it is shown in the graphs that the capacitance varies continually as it moves in the x(y) direction).

Regarding claims 10 and 11:

Claims 10 and 11 recite similar limitations as claims 2 and 3. Therefore, claims 10 and 11 are rejected under the same reasons set forth in claims 2 and 3, respectively.

Regarding to claim 13:

Claim 13 recites similar limitations as claims 5 and 9. Hence claim 13 is rejected under the same reasons set forth in claims 5 and 9.

Regarding claims 26 and 27:

Claims 26 and 27 recite similar limitations as claims 1 and 9, respectively. Thus, claims 26 and 27 are rejected under the same reasons set forth in claims 1 and 9.

Response to Arguments

5. Applicant's arguments with respect to claims 1-3, 5-7, 9-11, 13, 26 and 27 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lixi Chow whose telephone number is 571-272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LC 2/2/06


ANDREA WELLINGTON
SUPERVISORY PATENT EXAMINER